TRAVAUX DU MUSÉUM NATIONAL D'HISTOIRE NATURELLE «GRIGORE ANTIPA»

THE JOURNAL OF "GRIGORE ANTIPA" NATIONAL MUSEUM OF NATURAL HISTORY

Travaux du Muséum National d'Histoire Naturelle "Grigore Antipa" 63 (1): 63–67 (2020)
doi: 10.3897/travaux.63.e49546

FAUNISTIC NOTE

The ant cricket *Myrmecophilus orientalis* on the Dodecanese Islands, Greece (Orthoptera: Myrmecophilidae)

Thomas Stalling[1], Dragan Petrov Chobanov[2], Ionuț Ștefan Iorgu[3]

1 *Möndenweg 26, 79594 Inzlingen, Germany*
2 *Institute of Biodiversity and Ecosystem Research, Bulgarian Academy of Sciences, 1 Tsar Osvoboditel Blvd., 1000 Sofia, Bulgaria*
3 *"Grigore Antipa" National Museum of Natural History, 1 Kiseleff Blvd., 011341 Bucharest, Romania*

Corresponding author: *Thomas Stalling* (stalling@gmx.de)

Received 19 December 2019 | Accepted 7 February 2020 | Published 30 June 2020

Citation: Stalling T, Chobanov DP, Iorgu IȘ (2020) The ant cricket *Myrmecophilus orientalis* on the Dodecanese Islands, Greece (Orthoptera: Myrmecophilidae). Travaux du Muséum National d'Histoire Naturelle "Grigore Antipa" 63(1): 63–67. https://doi.org/10.3897/travaux.63.e49546

Abstract

This study reports the occurrence of the ant cricket *Myrmecophilus orientalis* Stalling, 2010 on the Dodecanese Islands Kos and Tilos, Greece. This is the first evidence of *M. orientalis* from Greece and Europe. The species lives in ant nests under stones and in dead wood in open scrubland and pine forests. The adults were found in the nests of large *Camponotus* species, while the juveniles were found in the nests of small ant species of the genera *Crematogaster* and *Lepisiota*. We assumed that the species changes the host ant species during its life cycle.

Keywords

Myrmecophilus, distribution, Europe, Greece

Ant crickets (genus *Myrmecophilus* Berthold, 1827) are small crickets that live as guests in the nests of ants. Most species live as kleptoparasites (Schimmer 1909, Wetterer and Hugel 2008). The genus *Myrmecophilus* has an almost cosmopolitan distribution, and to date, 10 species are known from Europe. Three *Myrmecophilus* species have been identified in Greece until now (Willemse et al. 2018): *M. hirticaudus* Fischer von Waldheim, 1846, *M. myrmecophilus* (Savi, 1819) and *M.*

Copyright *Stalling, Chobanov & Iorgu*. This is an open access article distributed under the terms of the Creative Commons Attribution License (CC BY 4.0), which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.

PENSOFT

ochraceus Fischer, 1853. *Myrmecophilus orientalis* Stalling, 2010 has so far been known only from Jordan and Eastern Turkey (Stalling 2010). The first records of *M. orientalis* from Greece and Europe are described here.

Ant nests were checked for the presence of *Myrmecophilus* on the island of Kos, Greece, in May 2018. The ant nests were found by turning stones and dead wood trunks. All specimens were captured and preserved in 70% ethanol. Subsequently, they were pinned and dried. In addition, specimens from the collections of the Museo Civico Di Storia Naturale Di Genova and Naturhistorisches Museum Wien were examined. Specimen identification was performed in accordance with the criteria of Stalling (2010) and by direct comparison with specimens of the type series of *M. orientalis* which is deposited in the collection of the Muséum d'Histoire naturelle de Genève (holotype) and the collection of the first author (paratypes). The ants were identified in accordance with the criteria of Agosti and Collingwood (1987), Karaman and Aktaç (2013) and Salata and Borowiec (2015).

Material examined (all Greece, South Aegean): Kos, Pyli, Paleo Pyli: 2 adult ♂ and 4 adult ♀, 25.iii.1989, leg. De Matthaeis, A. Vigna, coll. MSNG. Kos, Konidario, 36.851°N; 027.186°E, 125 m: 1 adult ♂, 2 juvenile ♂ and 2 juvenile ♀ in a nest of indeterminate ant species, 14.v.2018, leg. D. Chobanov & I. Ş. Iorgu, coll. T. Stalling. Kos, Konidario, 36.846°N; 027.192°E, 200 m (Fig. 1): 1 adult ♂ and 1 adult ♀ in a *Camponotus samius* nest, 24.v.2018; 2 adult ♂ and 1 adult ♀ in a nest of *C. samius* nest, 26.v.2018; 1 adult ♂ in a nest of *Camponotus baldaccii*, 26.v.2018; 1 adult ♂ and 2 adult ♀ in a nest of *C. samius*, 27.v.2018; 1 juvenile ♀ in a nest of *Lepisiota frauenfeldi*, 27.v.2018; all leg. & coll. T. Stalling. Kos, Zia, 36.849°N; 027.217°E, 390m: 1 adult ♀ (Fig. 2) in a nest of *C. samius*, 20.v.2018, leg. & coll. T. Stalling. Kos, Zia, 36.838°N; 027.200°E, 440m: 1 adult ♀ in a nest of *C. samius*, 27.v.2018; 7 juveniles of indefinite sex in a nest of *Crematogaster erectepilosa*, 27.v.2018, all leg. & coll. T. Stalling. Tilos, Livadia: 1 adult ♀, 27.iii.1989, leg. Bologny, coll. MSNG. The adult specimens from Greece are 2.2–2.5 mm (male) and 3.3–4.0 mm (female) in length respectively. Thus, they correspond largely to those of the type series in size.

The records of *Myrmecophilus orientalis* from Kos and Tilos are the first for Europe. The recent findings from Greece and a specimen of *M. orientalis* deposited in the collection of the Naturhistorisches Museum Wien (Austria) from the western part of Turkey (Dalyan, Muğla Province) show that the distribution area of *M. orientalis* extends much further to the west than hitherto known. Another specimen deposited in the collection of the Naturhistorisches Museum Wien (Austria) from Rhodes, Dodecanese Islands, Greece probably belongs to *M. orientalis.* The species can therefore be expected to occur all over the Dodecanese and the southern part of Turkey. In the past, the species might have been overlooked because of its cryptic lifestyle and difficulties in identification.

The adults of *M. orientalis* live with large *Camponotus* species. On Kos island, they were found in nests of *Camponotus baldaccii* Emery, 1908 (1 individual) and *Camponotus samius* Forel, 1889 (10 individuals). The juveniles were found with the much smaller ant species *Crematogaster erectepilosa* Salata and Boroviec, 2015 (7

individuals) and *Lepisiota frauenfeldi* (Mayr, 1855) (1 individual). Therefore, we can assume that *M. orientalis* changes the host ant species between larval and adult instar stages. This phenomenon has already been observed in other ant cricket species (Schimmer 1909, Akino 2008), but it is not known whether the adults lay the eggs in the nests of the small ant species, or whether the juvenile specimens migrate from the nests of the large to the small ants. Moving to new ant nests is very dangerous, but according to Akino (2008) ant crickets are able to adapt their hydrocarbon cuticular composition and profiles to those of the new host ant species and colonies within approximately one week, and are then no longer considered as intruders.

Acknowledgements

Many thanks to Dr. Roberto Poggi and Dr. Maria Tavano (Museo Civico Di Storia Naturale Di Genova, I-Genoa) for providing specimens for examination and to Armin Coray (Naturhistorisches Museum Basel, CH-Basel) and Vassiliki Kati (University of Ioannina, GR-Ioannina) for cooperation. The Greek authorities are kindly acknowledged for issuing collection permits (154812/951/6-6-2017 and 167303/449/9-5-2018). For travel funding, D. Chobanov and I. Ș. Iorgu acknowledge

Figure 1. Habitat of *Myrmecophilus orientalis*. Kos, Konidario, 27 May 2018 (Photo: T. Stalling).

Figure 2. *Myrmecophilus orientalis*, adult female. Kos, Zia, 20 May 2018 (Photo: T. Stalling).

the grants supporting the Orthoptera Species File (financed by the Orthopterists' Society in cooperation and the Illinois Natural History Survey) and D. Chobanov acknowledges the Synthesys grant AT-TAF-546 for his work in the Natural History Museum of Vienna in 2010.

References

Agosti D, Collingwood CA (1987) A provisional list of the Balkan ants (Hym. Formicidae) with a key to the worker caste. II. Key to the worker caste, including the European species without the Iberian. Mitteilungen der Schweizerischen Entomologischen Gesellschaft 60: 261–293.

Akino T (2008) Chemical strategies to deal with ants: a review of mimicry, camouflage, propaganda and phytomimesis by ants (Hymenoptera: Formicidae) and other arthropods. Myrmecological News 11: 173–181.

Karaman C, Aktaç N (2013) Descriptions of four new species of *Camponotus* Mayr (Hymenoptera: Formicidae), with a key for the worker caste of the *Camponotus* of Turkey. Journal of the Kansas Entomological Society 86(1): 33–56.

Salata S, Borowiec L (2015) Redescription of *Crematogaster cypria* Santschi, 1930, new status, with description of two new related species from Greece and Turkey (Hymenoptera, Formicidae). ZooKeys 505: 59–77.

Schimmer F (1909) Beitrag zu einer Monographie der Gryllodeengattung *Myrmecophila* Latr. [Contribution to a monograph of the gryllid genus *Myrmecophila* Latr.]. Zeitschrift für Wissenschaftliche Zoologie 93: 409–534. [in German]

Stalling T (2010) A new species of ant-loving cricket, *Myrmecophilus* Berthold, 1827, and comments on *M. nigricornis* (Chopard, 1963) from the Middle East (Orthoptera: Myrmecophilidae). Zoology in the Middle East 49: 89–94.

Wetterer JK, Hugel S (2008) Worldwide Spread of the Ant cricket *Myrmecophilus americanus*, a Symbiont of the Longhorn Crazy Ant, *Paratrechina longicornis*. Sociobiology 52(1): 157–165.

Willemse L, Kleukers R, Odé B (2018) The Grasshoppers of Greece. EIS, Leiden, 439 pp.